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PATENT  
Attorney Docket No. ASC-025DV1C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Cheng, *et al.*  
SERIAL NO.: 10/802,185 GROUP NO.: 2813  
FILING DATE: March 17, 2004 EXAMINER: Craig Thompson  
TITLE: SEMICONDUCTOR SUBSTRATE STRUCTURE

**CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8**

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Mail Stop Amendment Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 10<sup>th</sup> day of January, 2005.

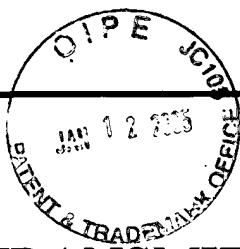
  
\_\_\_\_\_  
Wendy Martin

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith are: Transmittal Form (1 page); Supplemental Information Disclosure Statement (2 pages); Form PTO-1449 (4 pages); References labeled B48 and C102-C143; and a return receipt postcard.

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# TRANSMITTAL FORM

Application Serial Number	10/802,185
Filing Date	March 17, 2004
First Named Inventor	Cheng
Group Art Unit	2813
Examiner Name	Craig Thompson
Attorney Docket No.	ASC-025DV1C1
Patent No.	Not applicable
Issue Date	Not applicable

**ENCLOSURES (check all that apply)**

<input type="checkbox"/> Fee Transmittal Form <ul style="list-style-type: none"> <li><input type="checkbox"/> Check Attached</li> <li><input type="checkbox"/> Copy of Fee Transmittal Form</li> </ul>	<input type="checkbox"/> Copy of Notice to File Missing Parts of Application	<input type="checkbox"/> Notice of Appeal to Board of Patent Appeals and Interferences
<input type="checkbox"/> Amendment/Response <ul style="list-style-type: none"> <li><input type="checkbox"/> Preliminary</li> <li><input type="checkbox"/> After Final</li> <li><input type="checkbox"/> Affidavits/declaration(s)</li> <li><input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets _____]</li> </ul>	<input type="checkbox"/> Formal Drawing(s)	<input type="checkbox"/> Appeal Brief (in triplicate)
<input type="checkbox"/> Petition for Extension of Time	<input type="checkbox"/> Request For Continued Examination (RCE) Transmittal	<input type="checkbox"/> Status Inquiry
<input checked="" type="checkbox"/> Supplemental Information Disclosure Statement <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Form PTO-1449</li> <li><input checked="" type="checkbox"/> Copy of IDS Citations B48 and C102-C143</li> </ul>	<input type="checkbox"/> Power of Attorney (Revocation of Prior Powers)	<input checked="" type="checkbox"/> Return Receipt Postcard
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Certificate of First Class Mailing under 37 C.F.R. 1.8
<input type="checkbox"/> Sequence Listing submission <ul style="list-style-type: none"> <li><input type="checkbox"/> Paper Copy/CD</li> <li><input type="checkbox"/> Computer Readable Copy</li> <li><input type="checkbox"/> Statement verifying identity of above</li> </ul>	<input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application	<input type="checkbox"/> Certificate of Facsimile Transmission under 37 C.F.R. 1.8
	<input type="checkbox"/> Small Entity Statement	<input type="checkbox"/> Additional Enclosure(s) (please identify below)
	<input type="checkbox"/> CD(s) for large table or computer program	
	<input type="checkbox"/> Amendment After Allowance	
	<input type="checkbox"/> Request for Certificate of Correction <ul style="list-style-type: none"> <li><input type="checkbox"/> Certificate of Correction (in duplicate)</li> </ul>	

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**SIGNATURE BLOCK**

Respectfully submitted,

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PATENT  
Attorney Docket No. ASC-025DV1C1

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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SERIAL NO.: 10/802,185 GROUP NO.: 2813

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Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

**REMARKS**

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- (1) within three (3) months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- (2) after the period defined in (1) but before the mailing date of a final action or a notice of allowance under 37 C.F.R. 1.311, and
- the requisite Statement is below, OR
- the requisite fee under 37 C.F.R. 1.17(p), namely \$180.00, is included herein, or

- (3) after the mailing date of a **final action or notice of allowance** but before the payment of the issue fee, **AND**
- the requisite Statement is below, **AND**
- the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

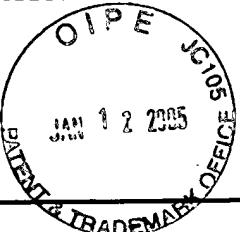
Respectfully submitted,

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3164997\_1

<b>FORM PTO - 1449</b> <b>INFORMATION DISCLOSURE STATEMENT</b> 					<b>ATTORNEY DOCKET NO.:</b> ASC-025DVC1 <b>APPLICANTS:</b> Cheng <i>et al.</i> <b>SERIAL NO.:</b> 10/802,185 <b>FILING DATE:</b> March 17, 2004 <b>GROUP:</b> 2813				
<b>U.S. PATENT DOCUMENTS</b>									
EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	<b>FILING DATE IF APPROPRIATE</b>		
<b>FOREIGN PATENT DOCUMENTS</b>									
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B48	6-244112	09/02/1994	JP				Y	Y
<b>OTHER ART, JOURNAL ARTICLES, ETC.</b>									
EXAM. INIT.	<b>OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>								
	C102	Batterman, "Hillocks, Pits, and Etch Rate in Germanium Crystals," <u>Journal of Applied Physics</u> , Vol. 28, No. 11 (November, 1957), pp. 1236-1241.							
	C103	Bohg, "Ethylene Diamine-Pyrocatechol-Water Mixture Shows Etching Anomaly in Boron-Doped Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 118, No. 2 (February 1971), pp. 401-402.							
	C104	Brunner et al., "Molecular beam epitaxy growth and thermal stability of Si <sub>1-x</sub> Ge <sub>x</sub> layers on extremely thin silicon-on-insulator substrates," <u>Thin Solid Films</u> , Vol. 321 (1998), pp. 245-250.							
	C105	Chen et al., "The Band Model and the Etching Mechanism of Silicon in Aqueous KOH," <u>Journal of the Electrochemical Society</u> , Vol. 142, No. 1 (January 1995), pp. 170-176.							
	C106	Desmond <i>et al.</i> , "The Effects of Process-Induced Defects on the Chemical Selectivity of Highly Doped Boron Etch Stops in Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 141, No. 1 (January 1994), pp. 178-184.							
	C107	Ehman <i>et al.</i> , "Morphology of Etch Pits on Germanium Studied by Optical and Scanning Electron Microscopy," <u>Journal of Applied Physics</u> , Vol. 41, No. 7 (June 1970), pp. 2824-2827.							
	C108	Feijoo <i>et al.</i> , "Etch Stop Barriers in Silicon Produced by Ion Implantation of Electrically Non-Active Species," <u>Journal of the Electrochemical Society</u> , Vol. 139, No. 8 (August 1992), pp. 2309-2313.							
	C109	Finne et al., "A Water-Amine-Complexing Agent System for Etching Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 114, No. 9 (September 1967), pp. 965-970.							
	C110	Fitzgerald, "GeSi/Si Nanostructures," <u>Annual Review of Materials Science</u> , Vol. 25 (1995), pp. 417-454.							
	C111	Frank, "Orientation-Dependent Dissolution of Germanium," <u>Journal of Applied Physics</u> , Vol. 31, No. 11 (November 1960), pp. 1996-1999.							
<b>EXAMINER</b>					<b>DATE CONSIDERED</b>				

<b>FORM PTO - 1449</b> <b>INFORMATION DISCLOSURE STATEMENT</b>				<b>ATTORNEY DOCKET NO.: ASC-025DVC1</b> <b>APPLICANTS:</b> Cheng <i>et al.</i> <b>SERIAL NO.:</b> 10/802,185 <b>FILING DATE:</b> March 17, 2004 <b>GROUP:</b> 2813					
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EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
<b>OTHER ART, JOURNAL ARTICLES, ETC.</b>									
EXAM. INIT.	<b>OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>								
	C112	Fukatsu, "SiGe-based semiconductor-on-insulator substrate created by low-energy separation-by-implanted-oxygen," <u>Applied Physics Letters</u> , Vol. 72, No. 26 (June 29, 1998), pp. 3485-3487.							
	C113	Ghandi <i>et al.</i> , "Chemical Etching of Germanium," <u>Journal of the Electrochemical Society</u> , Vol. 135, No. 8 (August 1988), pp.2053-2054.							
	C114	Godbey <i>et al.</i> , "A Si <sub>0.7</sub> Ge <sub>0.3</sub> strained-layer etch stop for the generation of thin layer undoped silicon," <u>Applied Physics Letters</u> , Vol. 56, No. 4 (January 22, 1990), pp. 373-375.							
	C115	Herzog <i>et al.</i> , "X-Ray Investigation of Boron- and Germanium-Doped Silicon Epitaxial Layers," <u>Journal of the Electrochemical Society</u> , Vol. 131, No. 12 (December 1984), pp.2969-2974.							
	C116	Holmes, "The Orientation Dependence of Etching Effects on Germanium Crystals," <u>Acta Metallurgica</u> , Vol. 7, No. 4 (April 1959), pp. 283-290.							
	C117	Huang <i>et al.</i> , "The Impact of Scaling Down to Deep Submicron on CMOS RF Circuits," <u>IEEE Journal of Solid State Circuits</u> , Vol. 33, No. 7 (July 1998), pp. 1023-1036							
	C118	Hunt <i>et al.</i> , "Highly Selective Etch Stop by Stress Compensation for Thin-Film BESOI," <u>1990 IEEE/SOI Technology Conference</u> , (October 2-4, 1990), pp.145-146.							
	C119	Jaccodine, " Use of Modified Free Energy Theorems to Predict Equilibrium Growing and Etching Shapes," <u>Journal of Applied Physics</u> , Vol. 33, No. 8 (August 1962), pp. 2643-2647.							
	C120	Kern, "Chemical Etching of Silicon, Germanium, Gallium, Arsenide, and Gallium Phosphide," <u>RCA Review</u> , Vol. 39 (June 1978), pp. 278-308.							
	C121	Lang <i>et al.</i> , "Bulk Micromachining of Ge for IR Gratings," <u>Journal of Micromechanics and Microengineering</u> , Vol. 6, No.1 (March 1996), pp. 46-48.							
	C122	Leancu <i>et al.</i> , "Anisotropic Etching of Germanium," <u>Sensors and Actuators</u> , A46-47 (1995), pp. 35-37.							
<b>EXAMINER</b> 3160321_1				<b>DATE CONSIDERED</b>					

<b>FORM PTO - 1449</b> <b>INFORMATION DISCLOSURE STATEMENT</b>				ATTORNEY DOCKET NO.: ASC-025DVC1 APPLICANTS: Cheng <i>et al.</i> SERIAL NO.: 10/802,185 FILING DATE: March 17, 2004 GROUP: 2813			
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**U.S. PATENT DOCUMENTS**

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE

**FOREIGN PATENT DOCUMENTS**

EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)

**OTHER ART, JOURNAL ARTICLES, ETC.**

EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)	
	C123	LeGoues <i>et al.</i> , "Relaxation of SiGe thin films grown on Si/SiO <sub>2</sub> substrates," <u>Applied Physics Letters</u> , Vol. 75, No. 11 (June 1, 1994), pp. 7240-7246.
	C124	Lehmann <i>et al.</i> , "Implanted Carbon: An Effective Etch-Stop in Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 138, No.5 (May 1991), pp. 3-4.
	C125	Narozny <i>et al.</i> , "Si/SiGe Heterojunction Bipolar Transistor with Graded GAP SiGe Base Made by Molecular Beam Epitaxy," <u>IEEE IEDM</u> (1988), pp. 562-565.
	C126	Palik <i>et al.</i> , "Ellipsometric Study of the Etch-Stop Mechanism in Heavily Doped Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 132, No. 1 (January 1985), pp. 135-141.
	C127	Palik <i>et al.</i> , "Study of Bias-Dependent Etching of Si in Aqueous KOH," <u>Journal of the Electrochemical Society</u> , Vol. 134, No. 2 (February 1987), pp. 404-409.
	C128	Palik <i>et al.</i> , "Study of the Etch-Stop Mechanism in Silicon," <u>Journal of the Electrochemical Society</u> , Vol. 129, No. 9 (September 1982), pp.2051-2059.
	C129	Petersen, "Silicon as a Mechanical Material," <u>Proceedings of the IEEE</u> , Vol. 70, No. 5 (May 1982), pp. 420-457.
	C130	Powell <i>et al.</i> , "New approach to the growth of low dislocation relaxed SiGe material," <u>Applied Physics Letters</u> , Vol. 64, No. 14 (April 4, 1994), pp. 1865-1858.
	C131	Rai-Choudhury <i>et al.</i> , "Doping of Epitaxial Silicon," <u>Journal of Crystal Growth</u> , Vol. 7 (1970), pp. 361-367.
	C132	Raley <i>et al.</i> , "(100) Silicon Etch-Rate Dependence on Boron Concentration in Ethylenediamine-Pyrocatechol-Water Solutions," <u>Journal of the Electrochemical Society</u> , Vol. 131, No. 1 (January 1984), pp. 161-170.
	C133	Seidel <i>et al.</i> , "Anisotropic Etching of Crystalline Silicon in Alkaline Solutions," <u>Journal of the Electrochemical Society</u> , Vol. 137, No. 11 (November 1990), pp. 3626-3632.

EXAMINER	DATE CONSIDERED
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<b>FORM PTO - 1449</b> <b>INFORMATION DISCLOSURE STATEMENT</b>					ATTORNEY DOCKET NO.: ASC-025DVC1 APPLICANTS: Cheng <i>et al.</i> SERIAL NO.: 10/802,185 FILING DATE: March 17, 2004 GROUP: 2813				
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EXAM. INIT.	<b>OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>								
	C134	Senna <i>et al.</i> , "Gallium Doping for Silicon Etch Stop in KOH," <u>Transducers '95/Eurosensors IX</u> , the 8 <sup>th</sup> International Conference on Solid-State Sensors and Actuators and Eurosensors IX, Stockholm, Sweden, June 25-29, 1995, pp. 194-195.							
	C135	Shang <i>et al.</i> , "The Development of an Anisotropic Si Etch Process Selective to Ge <sub>x</sub> Si <sub>1-x</sub> Underlayers," <u>Journal of the Electrochemical Society</u> , Vol. 141, No. 2 (February 1994), pp. 507-510.							
	C136	Soderbarg, "Fabrication of BEZOI-Materials Using Implanted Nitrogen as an Effective Etch Stop Barrier," <u>1989 IEEE SOS/SOI Technology Conference</u> , (October 3-5, 1989), pp. 64.							
	C137	Sundaram <i>et al.</i> , "Electrochemical etching of Silicon by Hydrazine," <u>Journal of the Electrochemical Society</u> , Vol. 140, No. 6 (June 1993), pp.1592-1597.							
	C138	Sze, "Physics of Semiconductor Devices," (1991).							
	C139	Takagi <i>et al.</i> , "On the Universality of Inversion Layer Mobility in Si MOSFET's: Part I-Effects of Substrate Impurity Concentration," <u>IEEE Transactions on Electron Devices</u> , Vol. 41, No. 12 (December 1994), pp. 2357-2362.							
	C140	Ting <i>et al.</i> , "Monolithic Integration of III-V Materials and Devices on Silicon," Part of the SPIE Conference on Silicon-Based Optoelectronics, San Jose, CA, (January 1999), pp. 19-28.							
	C141	Vol'fson <i>et al.</i> , "Fundamental Absorption Edge of Silicon Heavily Doped with Donor or Acceptor Impurities," <u>Soviet Physics Semiconductors</u> , Vol. 1, No. 3 (September 1967), pp. 327-332.							
	C142	Wu, "Novel Etch-Stop Materials for Silicon Micromachining," Thesis Submitted to the Massachusetts Institute of Technology Department of Materials Science and Engineering on May 9, 1997, pp. 1-62.							
	C143	Yi <i>et al.</i> , "Si <sub>1-x</sub> Ge <sub>x</sub> /Si Multiple Quantum Well Wires Fabricated Using Selective Etching," <u>Materials Research Society Symposium Proceedings</u> , Vol. 379 (1995), pp. 91-96.							

EXAMINER	DATE CONSIDERED
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